

Claims

Claimed is:

1. A process for preparing a capacitor comprising:
 fabricating an aluminum plate;
 pre-hydrating said aluminium plate;
 contacting said plate with an anodizing solution comprising glycerine, about 0.1 to about 2.0%, by weight, water and about 0.01 to about 0.5%, by weight, orthophosphate;
 applying a voltage to said aluminum plate of at least about 220 volts.
2. The process for preparing a capacitor of claim 1 further comprising the step of:
 etching said aluminum plate prior to said pre-hydrating of said aluminum plate.
3. The process for preparing a capacitor of claim 1 wherein said voltage is applied in increasing increments with an age time between each said increment.
4. The process for preparing a capacitor of claim 3 wherein said increments are less than about 75 volts.
5. The process for preparing a capacitor of claim 4 wherein said increments are at least about 20 V to no more than about 50 V.
6. The process for preparing a capacitor of claim 5 wherein said age time is sufficient for the current to decrease to from about 1 to about 50% of an initial current.
7. The process for preparing a capacitor of claim 6 wherein said age time is sufficient for the current to decrease to from about 10 to about 30% of said initial current.
8. The process for preparing a capacitor of claim 7 wherein said age time is sufficient for the

current to decrease to about 20% of said initial current.

9. The process for preparing a capacitor of claim 1 wherein said anodizing solution is at a temperature of about 25°C to about 125°C.
10. The process for preparing a capacitor of claim 9 wherein said anodizing solution is at a temperature of about 80°C to about 105°C.
11. The process for forming a capacitor of claim 1 wherein said anodizing solution comprises about 0.01 to about 0.1%, by weight, soluble orthophosphate.
12. The process for forming a capacitor of claim 1 wherein said soluble orthophosphate is selected from a group consisting of ammonium phosphate, alkali metal phosphate, amine phosphate or mixtures thereof.
13. The process for forming a capacitor of claim 1 wherein said soluble orthophosphate is selected from a group consisting of mono-sodium phosphate, di-potassium phosphate, and sodium potassium phosphate.
14. The process for forming a capacitor of claim 1 wherein said soluble orthophosphate is selected from a group consisting of mono-ammonium phosphate and di-ammonium phosphate.
15. The process for forming a capacitor of claim 1 wherein said anodising solution comprises about 0.1 to about 1%, by weight, water.
16. A capacitor prepared by the process of claim 1.
17. A device comprising a capacitor of claim 16.
18. The device of claim 17 wherein said device is an implantable medical device.

19. A process for preparing a capacitor comprising:
 - fabricating an aluminum plate;
 - pre-hydrating said aluminium plate;
 - contacting said plate with an anodizing solution comprising glycerine, about 0.1 to about 2.0%, by weight, water and about 0.01 to about 0.5%, by weight, orthophosphate;
 - applying a voltage to said aluminum plate and determining an initial current;
 - maintaining said first voltage until a first measured current is no more than 50% of said initial current;
 - increasing said voltage and redetermining said initial current;
 - maintaining said increased voltage until a second measured current is no more than about 50% of said redetermined initial current, and
 - continuing said increasing said voltage and said maintaining said increased voltage until a final voltage is achieved.
20. The process for preparing a capacitor of claim 19 further comprising the step of:
 - etching said aluminum plate prior to said pre-hydrating of said aluminum plate.
21. The process for preparing a capacitor of claim 19 wherein said final voltage is above 220 volts.
22. The process for preparing a capacitor of claim 19 wherein said voltage is increased by no more than about 75 volts.
23. The process for preparing a capacitor of claim 22 wherein said voltage is increased by at least about 20 V to no more than about 50 V.

24. The process for preparing a capacitor of claim 23 wherein said first measured current or said second measured current is from about 1 to about 50% of said initial current.
25. The process for preparing a capacitor of claim 24 wherein said first measured current or said second measured current is from about 10 to about 30% of said initial current.
26. The process for preparing a capacitor of claim 25 wherein said first measured current or said second measured current is about 20% of said initial current.
27. The process for preparing a capacitor of claim 19 wherein said anodizing solution is at a temperature of about 25°C to about 125°C.
28. The process for preparing a capacitor of claim 27 wherein said anodizing solution is at a temperature of about 80°C to about 105°C.
29. The process for forming a capacitor of claim 19 wherein said anodizing solution comprises about 0.01 to about 0.1%, by weight, soluble orthophosphate.
30. The process for forming a capacitor of claim 19 wherein said soluble orthophosphate is selected from a group consisting of ammonium phosphate, alkali metal phosphate, amine phosphate and mixtures thereof.
31. The process for forming a capacitor of claim 19 wherein said soluble orthophosphate is selected from a group consisting of mono-sodium phosphate, di-potassium phosphate, and sodium potassium phosphate.
32. The process for forming a capacitor of claim 19 wherein said soluble orthophosphate is selected from a group consisting of mono-ammonium phosphate and di-ammonium phosphate.

33. A capacitor prepared by the process of claim 19.
34. A device comprising a capacitor of claim 33.
35. The device of claim 34 wherein said device is an implantable medical device.
36. A capacitor comprising:
 - an etched aluminum anode and a dielectric layer comprising phosphate doped aluminum oxide;
 - prepared by the process of:
 - forming an aluminum plate;
 - pre-hydrating said aluminium plate;
 - contacting said plate with an anodizing solution comprising glycerine, about 0.1 to about 2.0%, by weight, water and about 0.01 to about 0.5%, by weight, orthophosphate;
 - applying a voltage to said aluminum plate and determining an initial current;
 - maintaining said first voltage until a first measured current is no more than about 50% of said initial current;
 - increasing said voltage and redetermining said initial current;
 - maintaining said increased voltage until a second measured current is no more than 50% of said redetermined initial current, and
 - continuing said increasing said voltage and said maintaining said increased voltage until a final voltage is achieved.